

REMARKS

Favorable reconsideration is respectfully requested.

The claims are 2-16.

The undersigned acknowledges the appreciation in the helpful interview with Examiner Leonard and Primary Examiner Nutter. As a result of said interview, it was indicated that the rejection on prior art may be overcome, subject to further consideration and search.

Further, at the interview, minor informalities were pointed out by the Examiners and these have been corrected by the above amendment.

New claims 11-13 are submitted herewith.

Support from new claim 11 is found in the present specification at page 18, lines 13 to 16. Support for new claim 12 is found at page 18, lines 1 to 3. Support for new claim 13 is found at page 14, lines 22 to 23.

Claim 1 has been deleted and the dependency of claims 3-6, 9, and 10 has been amended accordingly.

In claims 2 and 9, the term "preferably" has been deleted and the preferred embodiments are now recited in new claims 14-16.

The term "obtainable" has been deleted from claims 7 and 8, per the Examiner's suggestion.

During the interview, the Examiners questioned whether R_4 is in fact a divalent random block copolymer where m and n are 1. In reply, R_4 is defined as a divalent random block copolymer even if assuming that other possibilities exist when m and n are 1. Accordingly, claim 2 as it presently stands is clear and readily understandable to one of ordinary skill in the art.

Turning to the rejections on prior art, claims 1, 2 and 6 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Wamprecht et al. (U.S. 4,837,273).

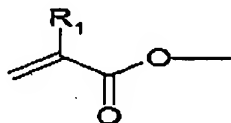
This rejection is respectfully traversed.

A brief discussion of the present invention will be of assistance and appreciating Applicants' reasons for traversal of the rejection.

The compound of claim 2 of Formula 1A has a polyurethane structure.

Moreover, Formula 1A of claim 2 defines a polymer wherein a divalent random block copolymer backbone of Formula 2A is incorporated (represented as R₄ in Formula 1A). This random block copolymer contains residues of 2 different polyols A and B.

The polymer according to claim 2 is further characterized in that it contains (meth)acryl groups



Hence the polymer according to the present claims is useful as a radiation curable polymer.

Wamprecht (US 4,837,273) relates to a different kind of polymer. Wamprecht relates to a 2- component lacquer (col. 4, lines 56-col. 5, line 8) mixture of a polymer (A) and a polyisocyanate (B). The polymer (A) is an acrylic polymer which is obtained by radical copolymerization of different monomers comprising carbon-carbon double bonds, such as polybutadienes and olefinically unsaturated monomers (such as alkylmethacrylates and hydroxyalkylmethacrylates) - see col. 2, line 57 to col. 3, line 26.

As a result of the radical copolymerization, the methacrylate monomers have reacted and hence no methacrylate functions remain in the acrylic copolymer (col.3, lines 42 to 45).

Due to the incorporation of hydroxyalkylmethacrylates, the final acrylic copolymer of Wamprecht contains hydroxyl groups. The hydroxyl-containing graft copolymer can then be used for the preparation of lacquer binders for films and coatings in combination with crosslinking agents (col. 5, lines 9-15), such as polyisocyanates. Hence the reaction of the acrylic graft copolymer (A) with the polyisocyanate (B) occurs during the formation of the coating or film. The film or coating obtained after this reaction does not contain a polymer comprising (meth)acrylic groups.

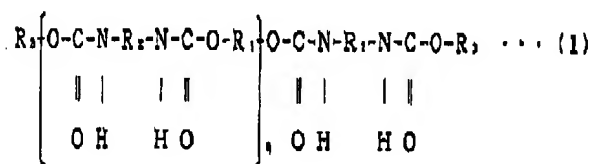
The polymer according to the present invention, in contrast, is typically prepared in a two stage process, first building an isocyanate terminated pre-polymer by reacting a mixture of the polyols with a polyisocyanate, followed by the (meth)acrylation of the backbone (page 13, lines 30-38).

Hence the polymer of claim 2 is novel in view of Wamprecht.

Matsunami (JP 2002/309185) is cited as evidence of Wamprecht inherently disclosing the presently claimed polymers, however, is this clearly not the case in view of the above discussion.

Moreover, the polymer of Claim 2 differs from the polymer disclosed by Matsunami (JP-2002/309185) in that its backbone contains 2 different polyol residues A and B. Matsunami discloses a polymer synthesized by first making a hydrogenated polybutadiene polyol react with a polyisocyanate compound, and secondly making an isocyanate group terminated compound obtained in the preceding step react with a hydroxyl group-containing (meth)acrylate.

The polymer according to Matsunami is built from a single polyol (a hydrogenated polybutadiene polyol), represented by R₁ in the formula presented by the Examiner.



Hence the polymer according to claim 2 also is novel with respect to Matsunami.

Claims 3-5 and 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over above-discussed Wamprecht et al. in view of Matsunami et al.

This rejection is also respectfully traversed.

As discussed above, Wamprecht does not disclose a polymer having (meth)acryl groups and therefore, there is nothing in Wamprecht or Matsunami which can overcome this deficiency.

Thus, the polymer of claim 2 differs from Wamprecht in that the polymer of claim 2 is a polyurethane having (meth)acrylate groups.

The polymer of claim 2 differs from Matsunami in that it contains a block copolymer backbone obtained from 2 different polyols.

Wamprecht relates to a lacquer for preparing coatings, especially for the motor vehicle sector. Matsunami relates to pressure-sensitive adhesives. Hence the one skilled in the art would not combine the teachings of Matsunami with the teachings of Wamprecht.

Moreover, were one skilled in the art to combine the teachings of both documents, he would not arrive to the polymer according to claim 2 of the present invention since Wamprecht

does not disclose a block copolymer wherein an acrylic copolymer polyol is mixed with a rubber polyol and then reacted with a polyisocyanate.

Claims 7-8 and 10 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Wamprecht et al. in view of Matsumani et al. in view of U.S. Patent Publication No. 2004/0214937 to Miller et al.

Wamprecht and Matsunami are discussed above.

Miller (US 2004/0214937) relates to a coating composition comprising a physical mixture of a polyurethane dispersion with an acrylic copolymer (page 1; [0001]). Miller does not teach preparation of polyurethanes having (meth)acryl functional groups.

In any event, neither Matsunami nor Miller can overcome the fact that Wamprecht fails to disclose a polymer having a (meth)acryl group.

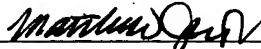
For the foregoing reasons, it is apparent that the present claims are neither disclosed nor suggested by the cited references alone or combination.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

Zhikai WANG et al.

By 
Matthew M. Jacob
Registration No. 25,154
Attorney for Applicants

MJ/kjf
Washington, D.C. 2005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
August 13, 2009